

WHAT IS CLAIMED IS:

1. A pressurized stem sealing arrangement for sealing an elongated stem having a first end in communication with a process fluid and an opposing second end arranged to be acted upon by an actuating force, the sealing arrangement comprising:

a piston surrounding a portion of the stem between the first and second ends, the piston including a face acted upon by a process fluid and a sleeve portion extending axially along the stem;

a seal packing retained in the sleeve portion, the seal packing including a first and second seal elements axially spaced apart by a spacer element, the seals being subjected to pressure generated by the piston.

2. The pressurized stem sealing arrangement of claim 1, wherein the first and second seal elements are spring biased cup seals.

3. The pressurized stem sealing arrangement of claim 1, wherein the seal packing is retained in the sleeve portion by a snap ring.

4. The pressurized stem sealing arrangement of claim 1, wherein the piston includes a first and second coaxial bore, the first coaxial bore having a larger diameter for receiving the seal packing, the second coaxial bore having a smaller diameter and adjacently surrounding the stem.

5. The pressurized stem sealing arrangement of claim 4, wherein the first and second coaxial bores form a shoulder, and the seal packing abuts against the shoulder.

6. The pressurized sealing arrangement of claim 1, wherein the seal packing is in fluid communication with a sealant cavity, the sealant cavity containing seal lubricant that is pressurized by the piston acted upon by the process fluid.

7. The pressurized stem sealing arrangement of claim 6 wherein the spacer element includes a plurality of ports providing fluid communication between the lubricant cavity and the first and second seal elements.

8. The pressurized stem sealing arrangement of claim 7, wherein the piston sleeve includes at least one through-port aligned with the spacer element for providing fluid communication between the lubricant cavity and the first and second seal elements.

9. The pressurized stem sealing arrangement of claim 2, wherein the seal packing further includes a guide bushing around the stem.

10. The pressurized stem sealing arrangement of claim 9, wherein the seal packing further includes a seal retainer washer axially adjacent each cup seal.

11. The pressurized sealing arrangement of claim 1, further comprising a removable cover enclosing the seal packing contained in the piston.

12. The pressurized sealing arrangement of claim 11, wherein the piston sleeve engages the removable cover.

13. The pressurized sealing arrangement of claim 12, wherein movement of the piston displaces the removable cover to indicate the amount of seal lubricant in the lubricant cavity.

14. The pressurized sealing arrangement of claim 11, wherein the removable cover is circular in shape for being received in a cylindrical recess.

15. A regulating valve comprising:
a valve body defining a flow passage;
a valve member including a plug member situated in the flow passage and a stem extending from the plug member;
a bonnet on the valve body, the stem extending through the bonnet;
a seal arrangement retained in the bonnet, the seal arrangement including a piston surrounding the stem and statically sealed to the valve body, and a seal packing contained in the piston dynamically sealing the stem.

16. The regulating valve of claim 15, wherein the seal packing includes first and second seals spaced apart by a spacer element.

17. The regulating valve of claim 16, further comprising a sealant cavity for containing seal lubricant, the sealant cavity in fluid communication with the seal packing and pressurized by the piston.

18. The regulating valve of claim 17, wherein the piston includes a face accessing the flow passage, whereby the face is acted upon by process fluid to pressurize the sealant cavity.

19. The regulating valve of claim 18, wherein the spacer element includes a plurality of ports arranged to provide a ring of seal lubricant around the stem and to provide seal lubricant to each of the cup seals.

20. The regulating valve of claim 16, wherein the seal packing is retained within the piston by a snap ring.

21. The regulating valve of claim 15, wherein the seal packing includes a first seal, a first seal retainer washer, a spacer element, a second seal retainer washer, a second seal, and a guide bushing axially arranged along the stem.

22. The regulating valve of claim 15, wherein the piston includes an indicator, the piston and indicator moveable with respect to a top surface of the bonnet to indicate the level of seal lubricant in the sealant cavity.

23. The regulating valve of claim 15, further comprising a removable cover for enclosing the seal packing.

24. The regulating valve of claim 23, wherein the removable cover is adjacent the bonnet when enclosing the seal packing.

25. A method of sealing an elongated stem extending through a valve bonnet having a flow passage for carrying process fluids, the method comprising
inserting a seal packing into a sleeve portion of a piston;
retaining the seal packing in the sleeve portion with a retaining ring;
surrounding the stem with the piston such that the seal packing is fitted around the stem;

restraining the piston with respect to the valve bonnet such that the piston communicates with the flow passage and a sealant cavity containing seal lubricant; and lubricating the seal package with seal lubricant as a result of pressure exerted on the sealant cavity from the piston.

26. The method of claim 25, further comprising covering the seal packing by placing a removable cover adjacent the valve bonnet.

27. The method of claim 25, further comprising monitoring the amount of seal lubricant in the sealant cavity by observing displacement of the piston with respect to the bonnet.

28. The pressurized stem sealing arrangement of claim 1 wherein the sealing arrangement is arranged to seal a well head valve that is actuated with means for actuating the well head valve without releasing process fluid.

29. The regulating valve of claim 15 wherein the seal arrangement is arranged to seal a well head valve that is actuated with means for actuating the well head valve without releasing process fluid.

30. The method of sealing an elongated stem of claim 25 wherein the sealing packing arrangement is arranged to seal a well head valve that is actuated with means for actuating the well head valve without releasing process fluid.